

REMARKS

This is in response to the Office action of August 12, 2003, and is timely filed as it is accompanied by a Request for Continuing Examination in addition to the requisite request for an extension of time. In light of the above amendments and the following remarks, Applicants respectfully request reconsideration and withdrawal of the rejections.

Status of the Application

Claims 1-21 were pending, and claims 1-21 were rejected. Claims 1-21 remain pending.

The Rejection Under 35 U.S.C. §103

The Examiner rejected claims 1-21 in view of two published PCT applications: WO 97/38362 (Santoline), and WO 97/45778 (Bowling). In particular, the Examiner rejected claims 1-9 and 12-18 under 35 U.S.C. §103 as being unpatentable over Santoline in view of Bowling. Additionally, the Examiner rejected claims 10, 11 and 19-21 under 35 U.S.C. §103 as being unpatentable over Santoline in view of Bowling, and further in view of U.S. Patent No. 6,377,859 to Brown et al. (Brown). Applicants respectfully traverse the rejections and request reconsideration.

A. Claims 1-18

Each of independent claims 1 and 12 (and, therefore, each of the associated dependent claims 2-11 and 13-18) recites a system or method that stores, on a single computer, both a configuration application which is capable of being executed within a distributed process control system workstation to create control modules for execution by a distributed controller, and a controller application which is adapted to be executed on a controller within a distributed process control system to implement the control modules during operation of the distributed process control system. Furthermore, as amended, the configuration application of this design and simulation system is adapted to create the one or more control modules (which are capable of being implemented within a distributed process controller) to communicate with a further module in a different device than the distributed process

controller (such as a field device or a different distributed controller) to perform a control activity. As a result, the recited design and simulation system and method use a controller application that creates a truly distributed control system, i.e., one having modules in different devices distributed throughout a process environment (and coupled together via external communication links) but which causes execution of the distributed modules within the same computer to simulate the operation of the modules within a distributed process control system on a single computer.

In this manner, the system and method of claims 1 and 12 enable a distributed process control routine to be designed (created) as having modules to be implemented in different devices (such as in different controllers, in a controller and a field device, etc.) but to be tested on a single computer. Such a combined design and operational testing system is particularly useful in distributed process control systems (in which control routines are generally designed to be located and executed in different process control devices, such as in different controllers and field devices at separate locations in the process plant) because it is sometimes difficult to correctly configure or create the appropriate process control routines and their communication interconnections in the first place.

Neither Santoline nor Bowling discloses or suggests that it would be desirable or even possible to provide, on a single computer, a complete design and simulation system that creates modules to be executed on different devices within the process and that simulates the interaction of these modules on a single computer, as recited by claims 1 and 12. Instead, as admitted by the Examiner, Santoline fails to disclose a configuration application of any type which is capable of creating control modules for execution by one or more distributed controllers or other devices within a process. Even if, as the Examiner asserts, Bowling discloses a configuration application (which Applicants do not admit), Bowling's disclosure is limited to the simulation and use of a control routine that is stored and executed on a single controller, not in multiple process devices. As a result, Bowling cannot and does not disclose a simulation system having a configuration application that creates modules to be executed on different devices within a process plant. At most, Bowling describes re-hosting a controller application from a single controller device within a process plant to simulate the operation of that controller alone. Bowling does not disclose or suggest placing a configuration application (used to create control modules run by the controller application in the first place) in the same simulation computer as the controller application nor does

Bowling disclose or suggest that any such configuration application could create separate modules to be executed in different devices so that the simulation system simulates the operation of modules implemented by different devices within the process control network.

As indicated above, the system and method of claims 1 and 12 not only allow a user to create control or other modules that are to be run or executed in different devices within a process plant, but enables those modules to be simulated on a single computer to observe their operation without having to download the control and other modules to the different devices within the process plant. Even if Bowling did disclose a combined design and simulation environment in which controller software can both be created and tested on a single computer (which applicants submit Bowling does not disclose), Bowling certainly fails to disclose a design system that designs or creates modules to be run on different devices within a process plant much less a simulation system that simulates the interoperation of different modules on different devices within the process plant. Instead, Bowling merely describes controller software that, once created and downloaded to a single controller within a process plant, can be re-hosted on an additional computer with a process model to simulate operation of that controller device. Thus, Bowling does not disclose or suggest is that is possible or desirable to simulate the interoperation of actual modules created to be run in different devices, such as in different controllers, on a single simulation computer within the process plant.

The addition of a configuration application that is able to create modules to be executed in different devices within a process plant, to a process control simulation environment that simulates the interoperation of those modules on a single computer is particularly important within distributed process control networks, in which the controller software is generally spread throughout different controllers and/or different field devices, all of which must communicate with one another in the correct manner to enable proper control system operation. Thus, configuration of the controller software includes not only how the software runs but how different parts of this software (e.g., different function blocks, etc.) communicate with one another either in the same device or in different devices. The configuration of such communication connections, while being particularly important, can also be a major source of error in creating the distributed process control routine in the first place because the wrong communication connections can cause incorrect operation of the controller software. Such a problem is not present in the system of Bowling in which the

controller software is all designed for and stored in a single controller and then simply re-hosted or copied to the simulation computer. Providing the configuration component of a distributed process control system in the same computer as the controller software provides a great advantage in distributed process control systems (as is recited by claims 1 and 12) as it enables a user to design or create and to then test the controller software, and its communication connections, prior to placing this controller software down within the different process control devices within the process plant.

The system and method recited by claims 1 and 12 therefore allow a user to simulate design of a process control system having control modules distributed throughout different devices within a distributed process control system and to then test that configuration once designed, all on a single computer, before the process control plant hardware is even available. Neither Santoline nor Bowling provides any suggestion or reason for adding a configuration application that creates modules to be run in different devices to a simulation system that simulates the interoperation of modules run or executed in different devices. The only suggestion or reasoning for providing the distributed configuration software on the same computer as the simulation software to simulate both the design and the operation of a truly distributed process control system comes from the applicants' disclosure, and not from any of the prior art, which does not recognize the need for such a combination.

Because the applied references do not disclose, teach, or suggest all the elements of each of claims 1-18, Applicants respectfully submit that these claims are allowable.

B. Claims 19-21

Independent claim 19 (and, therefore, each of claims 20-21 which depend from claim 19) recites a viewing application that is "adapted to communicate with the controller application and to use the display to display information sent from the further controller." The Examiner admits that Santoline does not disclose this element, but asserts that Bowling discloses this element.

While Bowling describes a first man-machine interface (MMI) through which a device controller can be monitored and/or controlled and a second MMI which can communicate with a simulation unit, Bowling does not disclose or suggest a single MMI that

can communicate with a controller application and display information sent from a further controller. To the contrary, Bowling describes two separate MMIs: a first MMI for the device controller and a second MMI for the simulation unit. In a similar manner, Brown fails to disclose this element, nor has the examiner cited Brown for such a disclosure. Thus, the applied references do not disclose, teach, or suggest the above-discussed element.

Because the applied references do not disclose, teach, or suggest all the elements of each of claims 19-21, Applicants respectfully submit that these claims are allowable.

Conclusion

In view of the foregoing, it is respectfully submitted that the above application is in condition for allowance and a notification of such is respectfully requested.

If the Examiner has any questions or comments regarding this action or if the Examiner believes that a telephone call to the below-identified attorney would be beneficial in any manner, the Examiner is respectfully requested to contact the attorney at the undersigned number.

Respectfully submitted,

By:



Roger A. Heppermann

Reg. No. 37,641

MARSHALL, GERSTEIN & BORUN LLP

6300 Sears Tower

233 South Wacker Drive

Chicago, Illinois 60606-6357

Tel.: (312) 474-6300

Fax: (312) 474-0448

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